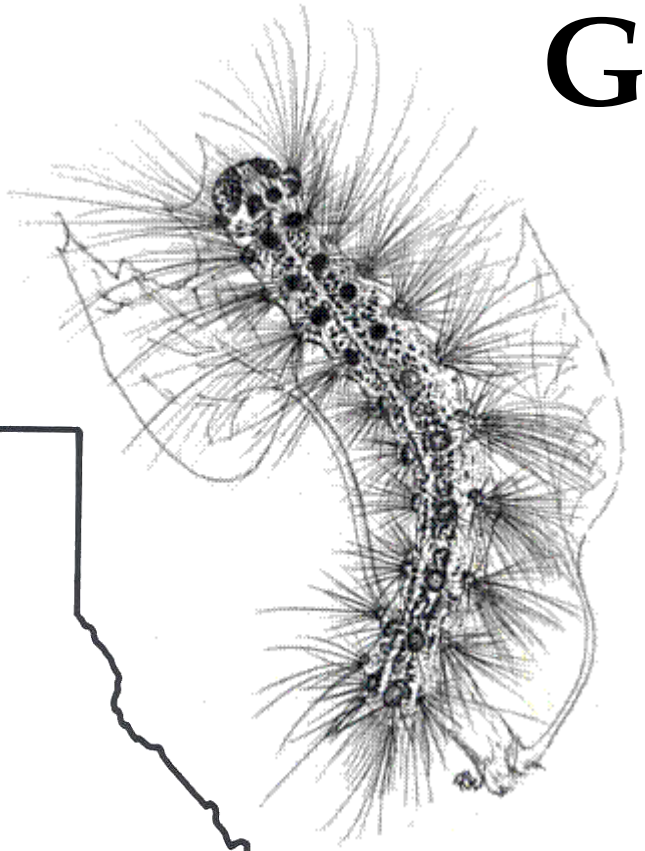
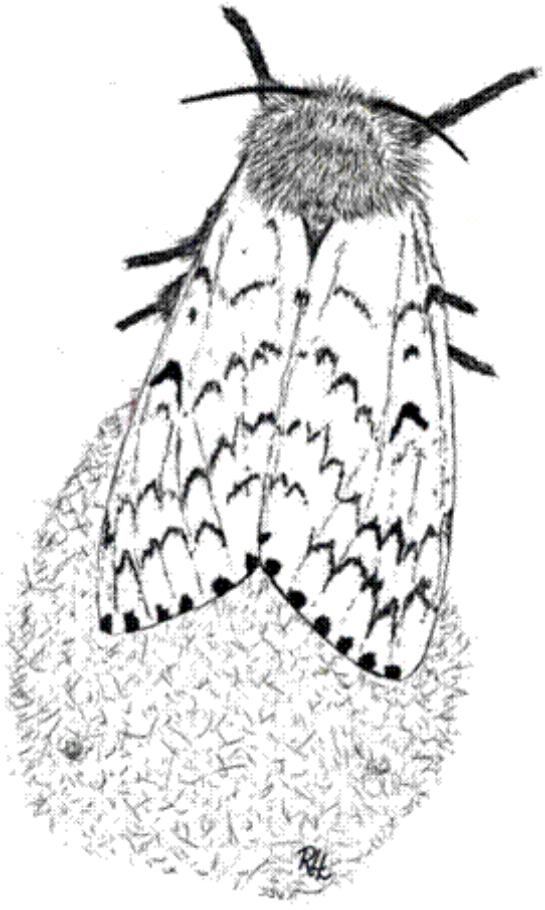
IDAHO

Gypsy Moth Report 2011





STATE OF IDAHO

GYPSY MOTH PROGRAM

SUMMARY REPORT

2011

by
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ABSTRACT

There were no gypsy moths captured in Idaho in 2011. Delimitation trapping was conducted at two locations in southern Idaho this season. The first delimitation trapping was surrounding the 2009 capture site of one male European gypsy moth (EGM) in Rexburg, in Madison County (Figure 1). The second location was surrounding the 2010 capture site of one male EGM in Meridian, in Ada County (Figure 2).

INTRODUCTION

The gypsy moth is a destructive defoliator of forest and shade trees as well as some conifers. Since introduction of the EGM into the United States in 1869, it has spread throughout New England and has become permanently established in all or part of 19 Northeast and Midwest states. Once a pest becomes established, eradication is usually not possible, and this has been the case for EGM. The Asian gypsy moth (AGM) was first discovered in North America in 1991 near the port of Vancouver in British Columbia, Canada. Since that time, AGM have been discovered and eradicated in California, Idaho, North Carolina, Oregon, Texas, and Washington State. Generally, AGM are introduced by ships moving cargo from overseas, whereas EGM are most often introduced to the west by people moving household items from generally infested areas of the United States.

The State of Idaho has eradicated all introductions of both EGM and AGM. As a result, Idaho has no established infestations of gypsy moth. It is the purpose of the Idaho Gypsy Moth Survey Program to detect new introductions of gypsy moths in a timely manner, before they become established and require extensive treatment for eradication. Delimitation and eradication can then be achieved with the least expense and least risk of environmental impact.

LIFE CYCLE

The gypsy moth goes through four life stages: egg, caterpillar (larva), pupa and adult moth. It has one generation per year and overwinters in the egg stage. Each female lays 50-1,000 eggs in one mass which is covered with velvety golden or buff-colored hairs from the female's abdomen. The egg mass is about ¾ inch wide and 1– 1 ½ inches long and is attached to trees, logs, rocks, buildings, sandbox toys, and on outdoor household articles.

Caterpillars hatch from eggs in mid-April to mid-June. This is the only damaging stage. A single caterpillar can eat up to three square feet of leaves in its lifetime. The caterpillars are voracious feeders and can grow to 2" in length. Larger (older) caterpillars have five pairs of blue spots and six pairs of rusty red spots along their backs. They typically feed in the treetops at night but migrate down the trunk to the ground each day as protection from the heat and birds.

Once a caterpillar matures it transforms into a non-feeding stage called the pupa. The pupa is an immobile stage during which the caterpillar changes into an adult moth. Pupae may gyrate if they are disturbed, but left alone they will appear still as the change occurs. They are dark reddish brown and leathery. A mature caterpillar may produce a flimsy "cocoon" with strands of silk which is used to attach themselves to as a pupa to vertical surfaces. They are usually found in crevices on tree trunks or on larger branches. Pupae may also be found buried in leaf litter.

Adult moths emerge in late July and could be present until early October depending upon location. Females have tan bodies from 1" to 2" long. Their wings are cream colored with dark brown zigzag markings. They are heavy and do not fly. Instead, females emit a scent (pheromone) to attract a mate. Scientists have been able to produce this pheromone synthetically

and use it to trap male moths. Males are medium sized (approx 1½ inch wingspan), brownish gray, have feathery antennae and fly in the late afternoon. Adult moths live for about one week, during which time the sexes mate. Females lay eggs during August and early September starting the life cycle over again.

HOSTS

Gypsy moth remains more of an urban forestry concern in Idaho; however a review of the host list shows there is a potential for gypsy moth to affect Idaho forests. The gypsy moth caterpillar generally prefer oaks as hosts, however they have the ability to feed on several hundred species of trees and shrubs. Preferred broadleaf hosts include oak, apple, alder, aspen, filbert, willow, birch, and plum. There is a large portion of understory trees in Idaho forests which are susceptible hosts for all gypsy moth larvae: alder spp., birch spp., poplar and willow spp., and Sorbus spp., as well as larch which is an economically import species in Idaho forests. As gypsy moth larvae mature, they are also able to survive on other economically important species of native Idaho conifer such as Douglas-fir, western hemlock and pines (Appendix B) (Liebhold et. al. 1995).

HISTORY

Surveys to detect the introduction of the gypsy moth, *Lymantria dispar L*., have been conducted in Idaho each year since 1974 (Table 1). The first gypsy moth was discovered in 1986 in Sandpoint in Bonner County. The following year numerous additional moths were caught in Sandpoint and Coeur d'Alene. Ground treatments were conducted in 1988 and aggressive aerial spray eradication programs followed in 1989 and 1990 using a naturally occurring bacterium, *Bacillus thuringiensis var. kurstaki* (*B.t.k.*) as the pesticide (Tisdale and Livingston 1990, Livingston 1990). No gypsy moths have been caught in the treated areas since 1989. Another small infestation (5 moths) was detected near Huetter, ID (in between Coeur d' Alene and Post Falls) in 1998. An eradication program was initiated in 1999 consisting of an aerial application of B.t.k to 35 acres surrounding the capture site. No moths were caught in detection or delimit traps in this area in subsequent years. In 2004, a gypsy moth determined to be of the Asian variety (AGM) was caught near Hauser, Idaho (Lech and Livingston 2004). A 600 acre aerial spray eradication program in Kootenai County, near Hauser, was conducted in 2005 using *B.t.k.*. Gypsy moths have been caught in various areas throughout the state in the annual detection surveys from 1986 through 2011 (Table 1), however, no eradication programs have occurred since 2004.

Cooperating agencies, with accompanying responsibilities in the Idaho gypsy moth program, include the following:

- Idaho Department of Lands - Overall program coordination and trapping in northern Idaho, except in Forest Service campgrounds.
- Idaho Department of Agriculture - Trapping in southwestern Idaho and submission of data to the National Agricultural Pest Information System (NAPIS) data library.
- USDA, APHIS - Provides cost share funding, traps, baits, and technical expertise.
- USDA Forest Service, Region 4 - Trapping in southeastern Idaho.
- USDA Forest Service, Region 1 - Trapping in Forest Service campgrounds in northern Idaho.
- Idaho Department of Transportation – Provides monthly reports of vehicle registrations in Idaho from states that are generally infested with gypsy moths.
- University of Idaho, Moscow – Technical assistance.

Table 1 - Gypsy moth trapping history in Idaho.

	NUMBER OF TRAPS SET				NUMBER OF MOTHS CAUGHT[6]				# POS. TRAPS	ACRES TREATED
YEAR	DET.[2]	DEL.[3]	MASS[4]	TOTAL	DET.[2]	DEL.[3]	MASS[4]	TOTAL		
1974[1]										
1975	45			45						
1976	254			254						
1977	232			232						
1978	248			248						
1979[1]										
1980	121			121						
1981	95			95						
1982	35			35						
1983[1]										
1984[1]										
1985[1]										
1986	208			208	1			1	1	
1987	420			420	35			35	9	
1988	1558	1457		3015	8	414		422	210	5 *B.t.k.*
1989	2248		7303	9551	17		51	68	54	380 *B.t.k.*
1990	5640	358	3268	9266	4	2		6	3	1055 *B.t.k.*
1991[5]	4641	121		4762	4			4	4	
1992	4823	130		4953	2	1		3	3	
1993	4314	115		4429	2			2	1	
1994	4239	96		4335	1	2		3	3	
1995	4522	136		4658	1			1	1	
1996	4290	117		4407						
1997	5085	20		5105						
1998	4904			4904	7			7	3	
1999	4837	155	90	5082						35 *B.t.k.*
2000	5398	36		5434						
2001	5346			5346	2			2	2	
2002	5024	35		5059						
2003	5582	35		5617						
2004	5875			5875	1 *AGM*			1	1 *AGM*	
2005	4989	1441		6430	1			1	1	600 *B.t.k.*
2006	5380	1473		6853						
2007	4882	1475		6357	2			2	2	
2008	4157	69		4226	3			3	3	
2009	4972	419		5391	1			1	1	
2010	4373	380		4753	1			1	1	
2011	4511	69		4580						

[1]Trapping did occur in Idaho in these years, and no moths were found. However, records are not complete as to the exact number of traps placed.
[2]Detection.
[3]Delimitation.
[4]Mass trapping for control at approximately 9 traps/acre.
[5]Number of traps set in 1991 revised after receipt of final data.
[6]All moths captured in Idaho have been of the European variety, except as noted in 2004.

Table 2 – Total number of gypsy moth traps placed, by agency, in Idaho in 2011.

AGENCY	DETECTION TRAPS	DELIMIT TRAPS	MASS TRAPS	TOTAL TRAPS
Idaho Dept. of Lands	**2412**	**0**	**0**	**2412**
Idaho Dept. of Agriculture	**1449**	**36**	**0**	**1485**
USFS - Region 4	**583**	**33**	**0**	**616**
USFS - Region 1	**67**	**0**	**0**	**67**
TOTALS	**4511**	**69**	**0**	**4580**

2011 EGM PROGRAM

EGM SURVEY:

Detection Trapping - In 2011, the cooperating agencies in the Idaho gypsy moth detection program placed 4511 detection traps throughout the state (Table 2). Trapping costs for the 2011 gypsy moth survey program in Idaho are shown in Table 3. Table 4 shows trap placements by county. Pheromone-baited traps were placed on a grid basis at a density of approximately 2-4 traps per square mile. Traps were placed throughout the state in cities, towns, surrounding urban areas, and rural communities in accordance with a pre-determined rotation schedule (see Appendix A). Cities and communities where 20 or more move-ins occurred were trapped irrespective of their place in the schedule. A move-in is defined as an individual or family moving to Idaho from a state that is generally infested with gypsy moths. This information is derived from vehicle registration information supplied on a monthly basis by the Idaho Department of Transportation. Most infestations are initiated when an egg mass or other life stage of the gypsy moth arrives on an outdoor household article brought by someone moving into the area. Between May 2010 and April 2011, there were 6,197 move-ins to the state; a 8% increase over the previous year. Campgrounds, tourist attractions, and other high-risk locations were also trapped. There were no gypsy moths captured in detection traps in Idaho in 2011.

At the Idaho Gypsy Moth Technical Advisory Committee (TAC) meeting in February, 2011, a continuing effort to optimize survey methods while maintaining an effective detection program was discussed. In the past couple years, several tools for optimizing the survey have been developed and implemented. A trap reduction tool was developed and implemented in 2007. This trap density reduction process was accomplished by utilizing a GIS scripting tool designed by Elizabeth Delmelle, former GIS Analyst, Sr., and Gretchen Lech, former IDL Gypsy Moth Program Coordinator. The Idaho Gypsy Moth "Move-in" database had major upgrades in 2009. The database now holds addresses and geocoded locations of people moving in from gypsy moth infested states. We can now map move-ins using ArcGIS. The Idaho Gypsy Hazard/Risk map, an ongoing project, was started 2007 an implemented in 2009. This model includes hazard a map, produced using BioSim and utilizing historic weather data from across Idaho. The hazard map shows the probability of establishment, if gypsy moth is introduced. The model also includes a risk map, which was developed using available GIS layers including: vegetation (hosts), roads, highways and railroads (GM entrance pathways), lakes and rivers (tourism and vacation areas) and cities (based on population). These layers were chosen based on the fact that they all affect the introduction rate of gypsy moth to Idaho. All of the layers were combined to give us an all risk model for Idaho. The Hazard/Risk Map will continue to be updated as new and updated data/layers become available.

Another tool provided by APHIS is campground reservation data. This data is gathered from compiling reservations made online at the recreation.gov website. APHIS provides a report which delimits the number of reservations from GM infested states and number of nights stayed at the campground. In Idaho we regularly trap most campgrounds but this tool allows us to double check to make sure we are trapping campgrounds at high risk.

The combination of the above tools allow for analysis of trap zones to determine if changes (additional traps or reductions) to trap zones are necessary. These tools also allow for improved placement if additions are needed.

Delimitation Trapping – Delimitation trapping for European Gypsy Moths was conducted at two locations in 2011. The second year of delimitation trapping was conducted surrounding the 2009 capture of one male EGM in Rexburg, Madison County, Idaho. The Rexburg delimit consisted of 34 traps; no moths were caught in 2011 so this was the final year of the delimit survey. The first year of delimiting was also conducted surrounding the 2010 capture sites of one male EGM in Meridian, Idaho. The Meridian delimit consisted of 36 traps; no moths were caught in 2011.

Mass Trapping – No mass trapping for EGM was conducted in Idaho in 2011.

2011 AGM PROGRAM

The relative risk of introduction of the Asian Gypsy Moth continues to increase. The capture of one male AGM in Idaho in 2004 is an indication that other routes besides ports need increased vigilance. Detection trapping will be adjusted, as necessary, based upon relative risk of AGM introductions.

AGM ERADICATION:

Aerial Spray- No eradication projects were conducted in Idaho during the 2011 season.

AGM SURVEY:

Delimitation Trapping –The final year of the delimitation trapping surround the AGM capture site near Hauser Lake, Idaho was 2007 and the infestation in this area has been declared eradicated. There were no delimit surveys for AGM in 2011 and none are planned for 2012.

2012 PROGRAM

Eradication - No eradications are proposed for the 2012 season.

Delimitation Trapping – Delimitation trapping will be conducted at one location in 2012. A second year of a 36 trap delimit survey will be conducted in Meridian following the capture of one male EGM there in 2010.

Table 3 – Estimated costs of the 2011 gypsy moth survey and treatment program.

AGENCY	COST	
	European GM	**Asian GM**
State Funds to Idaho Department of Lands and Idaho State Department of Agriculture	$77,000	
USDA – APHIS Cooperative Grant to ISDA and IDL	$22,500	
US Forest Service- Region 1	$3,000	
US Forest Service- Region 4	$15,000	
USDA- APHIS Direct Costs for traps, baits and travel	$3,000	
Total	$120,500	
GRAND TOTAL	$120,500	

Table 4 - 2011 Trap placements by county

County Name	No.	DETECTION 2-4/MILE2	DELIMITATION 16 -36/MILE2	MASS 9/ACRE	TOTAL TRAPS
Ada	1	412	36		448
Bannock	2	113			113
Bear Lake	3	20			20
Benewah	4	75			75
Bingham	5	42			42
Blaine	6	157			157
Boise	7	2			2
Bonner	8	681			681
Bonneville	9	112			112
Boundary	10	124			124
Butte	11	12			12
Canyon	12	155			155
Caribou	13	18			18
Cassia	14	35			35
Clark	15	6			6
Clearwater	16	83			83
Custer	17	29			29
Elmore	18	63			63
Franklin	19	12			12
Fremont	20	31			31
Gem	21	45			45
Gooding	22	61			61
Idaho	23	92			92
Jefferson	24	24			24
Jerome	25	26			26
Kootenai	26	797			797
Latah	27	211			211
Lemhi	28	36			36
Lewis	29	7			7
Madison	30	19	33		52
Minidoka	31	34			34
Nez Perce	32	99			99
Oneida	33	14			14
Payette	34	50			50
Power	35	14			14
Shoshone	36	243			243
Teton	37	8			8
Twin Falls	38	203			203
Valley	39	234			234
Washington	40	45			45
USFS R1 CG	41	67			67
					4580

Figure 1: State of Idaho 2009 Gypsy Moth Capture Sites

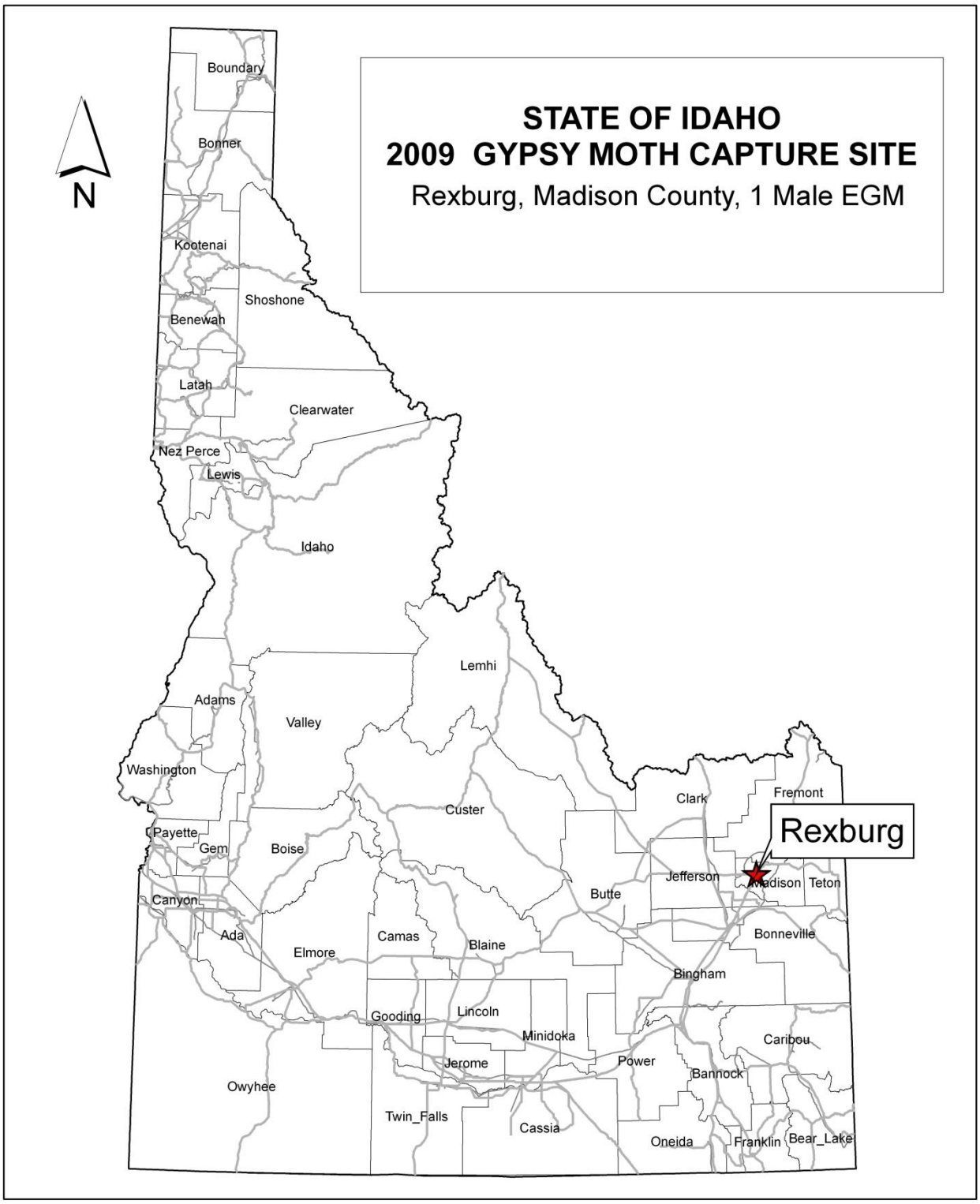
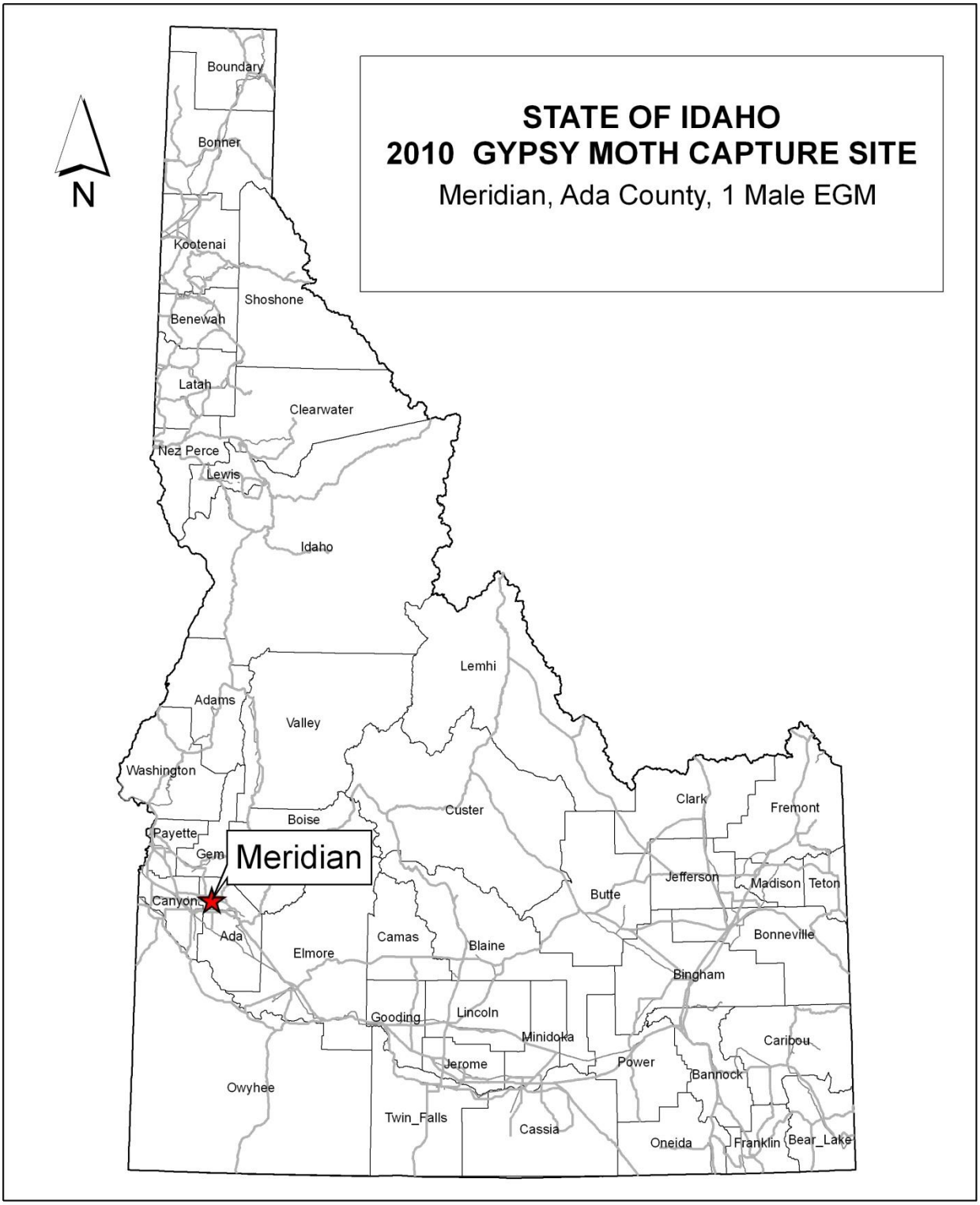


Figure 2: State of Idaho 2010 Gypsy Moth Capture Sites



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APPENDIX A

GYPSY MOTH DECISION CRITERIA FOR AREAS TO TRAP

Original decision criteria as to what areas (zones) or cities to do detection trapping for gypsy moth in and on what schedule to trap were developed by the Gypsy Moth Technical Advisory Committee in 1989. Revisions have been made in succeeding years. The cities, towns, communities and rural areas of the state are categorized as follows.

Category 1. Detection Surveys conducted annually. This category includes larger cities and towns where numerous people or families moving into the area (move-ins) each year cause a substantial risk of gypsy moth infestation and dictate annual detection trapping. Consideration was also given to cities with colleges, industry, a military base, or tourism that would influence the risk of infestation or that otherwise made annual detection trapping advisable. There are currently 93 category 1 communities/ areas in Idaho.

Category 2. This category includes smaller cities and towns with populations greater than 2000 but which normally have fewer move-ins. Detection trapping will normally be done every second year. There are currently 12 category 2 communities/ areas in Idaho.

Category 3. This category includes communities and other areas with populations generally less than 2000. Detection trapping is normally done every third year. There are currently 197 category 3 communities/ areas in Idaho.

Category 4. This category includes small isolated towns or communities where limited or non-contiguous host interrupts the natural or unaided spread of the insect. These zones will be trapped only every third year, without regard to move-ins. There are currently 43 category 4 communities/ areas in Idaho.

Category 5. This category was developed for rural communities or areas where little or no risk of introduction exists due to lack of host or limited population. These areas are not trapped unless something occurs that would increase the risk of introduction in a particular year. There are currently 8 category 5 communities/ areas in Idaho that have been trapped.

A large percentage of the gypsy moth movement around the nation is brought about by families moving into a community and bringing gypsy moths in various life stages (particularly egg masses) with them, usually on outdoor household articles. For this reason, it was determined by the Technical Advisory Committee that if more than 20 move-ins occurred in a category 1, 2 or 3 zone in a one year period (May- April), that zone would be trapped that year, regardless of where it was in the normal schedule. This additional trapping will not interrupt or alter the regular schedule. A move-in is defined as an individual or family moving to Idaho from a state that is generally infested with gypsy moths. This information is provided to the program by the Idaho Department of Transportation.

The following pages comprise a list of Idaho cities and towns and the category into which they fall.

GYPSY MOTH TRAP

ZONE CATEGORIES

Zone	City	County	Category
Aberdeen	Aberdeen	Bingham	3
Acequia	Acequia	Minidoka	4
Ahsahka	Ahsahka	Clearwater	3
Albion	Albion	Cassia	4
Almo	Almo	Cassia	4
Alpine CG		Bonneville	1
American Falls	American Falls	Power	1
Arco	Arco	Butte	4
Arimo	Arimo	Bannock	4
Ashton	Ashton	Fremont	3
Athol	Athol	Kootenai	1
Atlanta	Atlanta	Elmore	3
Bailey Creek	Bailey Creek	Caribou	3
Bancroft	Bancroft	Caribou	3
Banida	Banida	Franklin	3
Banks	Banks	Boise	3
Basalt	Basalt	Bingham	3
Bayhorse CG		Custer	1
Beauty Bay	Beauty Bay	Kootenai	3
Bellevue	Bellevue	Blaine	1
Benewah	Benewah	Benewah	3
Bennington	Bennington	Bear Lake	4
Bern	Bern	Bear Lake	4
Big Springs CG		Fremont	1
Blackfoot	Blackfoot	Bingham	1
Blackrock	Blackrock	Bannock	1
Bliss	Bliss	Gooding	3
Bloomington	Bloomington	Bear Lake	3
Boise	Boise	Ada	1
Bonners Ferry	Bonners Ferry	Boundary	1
Bonners South	Bonners Ferry	Boundary	3
Border		Boundary	1
Bovill	Bovill	Latah	3
Bowmont	Bowmont	Canyon	3
Bruneau	Bruneau	Owyhee	3
Bruneau Hot Springs	Bruneau Hot Springs	Owyhee	3
Buhl	Buhl	Twin Falls	2
Bull Trout CG		Boise	1

Zone	City	County	Category
Burley	Burley	Cassia	1
Buttermilk CG		Fremont	1
Calamity CG		Bonneville	1
Calder	Calder	Shoshone	3
Caldwell	Caldwell	Canyon	1
Cambridge	Cambridge	Washington	3
Cameron	Cameron	Nez Perce	3
Cardiff	Cardiff	Clearwater	3
Carey	Carey	Blaine	3
Careywood	Careywood	Bonner	3
Cascade	Cascade	Valley	1
Castleford	Castleford	Twin Falls	3
Cavendish	Cavendish	Clearwater	3
Centerville	Centerville	Boise	3
Challis	Challis	Custer	3
Chatcolet	Chatcolet	Benewah	3
Chester	Chester	Fremont	4
China Cap	China Cap	Caribou	4
Clark Fork	Clark Fork	Bonner	3
Clarkia	Clarkia	Shoshone	3
Clayton	Clayton	Custer	3
Clearwater	Clearwater	Idaho	3
Clifton	Clifton	Franklin	3
Cobalt	Cobalt	Lemhi	5
Coeur D'Alene	Coeur d'Alene	Kootenai	1
Coeur D'Alene River	Prichard	Shoshone	3
Coeur D'Alene West	Coeur D'Alene West	Kootenai	2
Coolin	Coolin	Bonner	3
Corral	Corral	Camas	5
Cottonwood	Cottonwood	Idaho	3
Council	Council	Adams	3
Craigmont	Craigmont	Lewis	3
Crouch	Crouch	Boise	3
Culdesac	Culdesac	Nez Perce	3
Dayton	Dayton	Franklin	3
Deary North	Deary	Latah	3
Deary South	Deary	Latah	3
Declo	Declo	Cassia	4

Zone	City	County	Category
Deep Creek	Deep Creek	Latah	3
Deer Trail Delimit		Bonner	5
Desmet	Desmet	Benewah	3
Dietrich	Dietrich	Elmore	3
Dingle	Dingle	Bear Lake	4
Donnelly	Donnelly	Valley	1
Downey	Downey	Bannock	3
Driggs	Driggs	Teton	1
Dubois	Dubois	Clark	4
Eagle	Eagle	Ada	1
Eastport	Eastport	Boundary	3
Eden	Eden	Jerome	3
Elk City	Elk City	Idaho	1
Elk River	Elk River	Clearwater	3
Elkhorn	Elkhorn Village	Blaine	1
Elmira	Elmira	Bonner	3
Emida	Emida	Benewah	3
Emmett	Emmett	Gem	1
Fairfield	Fairfield	Camas	3
Falls CG		Bonneville	1
Farragut	Bayview	Kootenai	1
Featherville	Featherville	Elmore	3
Ferdinand	Ferdinand	Idaho	3
Fernwood	Fernwood	Benewah	3
Filer	Filer	Twin Falls	2
Firth	Firth	Bingham	3
Fish Haven	Fish Haven	Bear Lake	3
Flat Rock CG		Fremont	1
Fort Hall	Fort Hall	Bingham	3
Four Corners	Four Corners	Bonner	3
Franklin	Franklin	Franklin	3
Fraser	Fraser	Clearwater	3
Fruitland	Fruitland	Payette	1
Fruitvale	Fruitvale	Adams	3
Gannett	Gannett	Blaine	3
Garden Valley	Garden Valley	Boise	3
Gardena	Gardena	Boise	3
Genesee	Genesee	Latah	3
Georgetown	Georgetown	Bear Lake	3
Givens Hot Springs	Givens Hot Springs	Owyhee	4
Gleason Meadows	Gleason Meadows	Bonner	3
Glenns Ferry	Glenns Ferry	Elmore	3

Zone	City	County	Category
Glenwood	Glenwood	Idaho	3
Gold Hill	Gold Hill	Latah	3
Gooding	Gooding	Gooding	2
Grace	Grace	Caribou	3
Grand View	Grand view	Owyhee	3
Grandjean CG		Boise	1
Grangemont	Grangemont	Clearwater	3
Grangeville	Grangeville	Idaho	1
Greenleaf	Greenleaf	Canyon	3
Hagerman	Hagerman	Gooding	3
Hailey	Hailey	Blaine	1
Hamer	Hamer	Jefferson	4
Hammett	Hammett	Elmore	3
Hansen	Hansen	Twin Falls	3
Harris Ridge	Harris Ridge	Idaho	3
Harrisburg	Harrisburg	Idaho	3
Harrison	Harrison	Kootenai	3
Hauser Delimit		Kootenai	5
Hayden Delimit	Coeur d'Alene	Kootenai	5
Hazelton	Hazelton	Jerome	3
Headquarters	Headquarters	Clearwater	3
Heise	Heise	Jefferson	4
Heise Delimit	Heise	Jefferson	5
Helmer	Helmer	Latah	3
Heyburn	Heyburn	Minidoka	2
Hill City	Hill City	Camas	3
Holbrook	Holbrook	Oneida	4
Homedale	Homedale	Owyhee	2
Hope	Hope	Bonner	3
Horseshoe Bend	Horseshoe Bend	Boise	3
Howe	Howe	Butte	4
Huston	Huston	Canyon	4
Idaho City	Idaho City	Boise	3
Idaho Falls	Idaho Falls	Bonneville	1
Indian Valley	Indian Valley	Adams	3
Inkom	Inkom	Bannock	3
Iona	Iona	Bonneville	3
Iron Creek CG		Custer	1
Island Park	Island Park	Fremont	3
Jaype	Jaype	Clearwater	3
Jerome	Jerome	Jerome	1
Juliaetta	Juliaetta	Latah	3
Kamiah	Kamiah	Lewis	1

Zone	City	County	Category
Kamiah East	Kamiah	Idaho	1
Kamiah North	Kamiah	Idaho	1
Kellogg/Pinehurst	Kellogg	Shoshone	2
Kendrick	Kendrick	Latah	3
Ketchum	Ketchum	Blaine	1
Kimama	Kimama	Lincoln	5
Kimberly	Kimberly	Twin Falls	1
King Hill	King Hill	Elmore	3
Kingston Delimit		Shoshone	5
Kooskia	Kooskia	Idaho	3
Kreiger Creek	Kreiger Creek	Bonner	3
Kuna	Kuna	Ada	1
Laclede	Laclede	Bonner	3
Lake Fork	Lake Fork	Valley	1
Lamb Creek	Lamb Creek	Bonner	3
Lapwai	Lapwai	Nez Perce	3
Larson	Larson	Clearwater	3
Lava Hot Spring	Lava Hot Springs	Bannock	3
Leadore	Leadore	Lemhi	4
Leland	Leland	Nez Perce	3
Lenore	Lenore	Nez Perce	3
Letha	Letha	Gem	3
Lewiston	Lewiston	Nez Perce	1
Lewisville	Lewisville	Jefferson	3
Lolo	Lolo	Idaho	5
Lowell	Lowell	Idaho	3
Lower Mesa CG		Fremont	1
Lowman	Lowman	Boise	3
Lucile	Lucile	Idaho	3
Mackay	Mackay	Custer	3
Malad City	Malad City	Oneida	2
Malta	Malta	Cassia	4
Marsing	Marsing	Owyhee	3
Masacre Rock	Massacre Rocks	Power	3
May	May	Lemhi	4
McAbee Falls	McAbee Falls	Bonner	3
McCall	McCall	Valley	1
McCammon	McCammon	Bannock	3
McCoy CG		Bonneville	1
Melba	Melba	Canyon	3
Menan	Menan	Jefferson	3
Meridian	Meridian	Ada	1
Meridian Delimit	Meridian	Ada	5

Zone	City	County	Category
Mesa	Mesa	Adams	3
Mica Bay	Mica Bay	Kootenai	3
Middleton	Middleton	Canyon	1
Midvale	Midvale	Washington	3
Mike Harris CG		Bonneville	1
Minidoka	Minidoka	Minidoka	4
Mink Creek	Mink Creek	Franklin	4
Monteview	Monteview	Jefferson	4
Montpelier	Montpelier	Bear Lake	2
Moore	Moore	Butte	4
Moreland	Moreland	Bingham	4
Moscow	Moscow	Latah	1
Mountain Home	Mountain Home	Elmore	1
Mountain Home AFB	Mountain Home AFB	Elmore	1
Mountain Home Delimit	Mountain Home	Elmore	5
Moyie East	Moyie Springs	Boundary	3
Moyie Springs	Moyie Springs	Boundary	3
Mt. Heyburn CG		Custer	1
Mud Lake	Mud Lake	Jefferson	4
Murphy	Murphy	Owyhee	3
Murray	Murray	Shoshone	3
Murtaugh	Murtaugh	Twin Falls	3
Nampa	Nampa	Canyon	1
Naples	Naples	Boundary	3
New Meadows	New Meadows	Adams	3
New Plymouth	New Plymouth	Payette	3
Newdale	Newdale	Fremont	4
Nordman	Nordman	Bonner	3
North Fork	North Fork	Lemhi	3
Notus	Notus	Canyon	3
Oakley	Oakley	Cassia	3
O'Brien CG		Custer	1
Ola	Ola	Gem	3
Oreana	Oreana	Owyhee	3
Orofino	Orofino	Clearwater	1
Orofino SE	Orofino	Clearwater	3
Osburn	Osburn	Shoshone	2
Outlet CG		Custer	1
Ovid	Ovid	Bear Lake	4
Oxford	Oxford	Franklin	3
Pack River	Pack River	Bonner	3
Paris	Paris	Bear Lake	3

Zone	City	County	Category
Parker	Parker	Fremont	4
Parma	Parma	Canyon	2
Paul	Paul	Minidoka	3
Payette	Payette	Payette	1
Pearl	Pearl	Gem	3
Peck	Peck	Nez Perce	3
Picabo	Picabo	Blaine	3
Pierce	Pierce	Clearwater	3
Pine	Pine	Elmore	3
Pine Creek CG		Bonneville	1
Pingree	Pingree	Bingham	4
Pioneerville	Pioneerville	Boise	3
Placerville	Placerville	Boise	3
Pleasantview	Pleasantview	Oneida	3
Plummer	Plummer	Benewah	3
Pocatello	Pocatello	Bannock	1
Pole Flat CG		Custer	1
Pollock	Pollock	Idaho	3
Porthill	Porthill	Boundary	3
Post Falls	Post Falls	Kootenai	1
Potlatch	Potlatch	Latah	3
Potlatch South	Potlatch	Latah	3
Powell	Powell	Idaho	5
Preston	Preston	Franklin	1
Priest River	Priest River	Bonner	1
Priest River South	Priest River	Bonner	1
Rathdrum	Rathdrum	Kootenai	1
Reubens	Reubens	Lewis	3
Rexburg	Rexburg	Madison	1
Rexburg Delimit	Rexburg	Madison	5
Reynolds	Reynolds	Owyhee	3
Richfield	Richfield	Lincoln	3
Riddle	Riddle	Owyhee	3
Rigby	Rigby	Jefferson	1
Riggins	Riggins	Idaho	3
Ririe	Ririe	Bonneville	3
Riverside	Riverside	Bingham	4
Riverside CG		Fremont	1
Roberts	Roberts	Jefferson	3
Robin	Robin	Bannock	4
Rock Creek	Rock Creek	Twin Falls	1
Rockford	Rockford	Bingham	4
Rockford Bay	Rockford Bay	Kootenai	3
Rockland	Rockland	Power	4
Rogerson	Rogerson	Twin Falls	3
Rose Lake	Rose Lake	Kootenai	3
Roswell	Roswell	Canyon	3
Rupert	Rupert	Minidoka	1
Rural Moscow	Moscow	Latah	3
Sagle East	Sagle East	Bonner	2
Sagle West	Sagle West	Bonner	2
Salmon	Salmon	Lemhi	1
Salmon River	Salmon River	Custer	2
Salmon River CG		Custer	1
Samaria	Samaria	Oneida	3
Sandpoint	Sandpoint	Bonner	1
Scout Mountain CG		Bannock	1
Shelley	Shelley	Bingham	1
Shoshone	Shoshone	Lincoln	3
Silver City	Silver City	Owyhee	4
Slickpoo Mission	Slickpoo	Nez Perce	3
Smiths Ferry	Smiths Ferry	Valley	3
Smokey Bear CG		Custer	1
Soda Springs	Soda Springs	Caribou	1
Southwick	Southwick	Nez Perce	3
Spalding	Spalding	Nez Perce	3
Spirit Lake	Spirit Lake	Kootenai	3
Springfield	Springfield	Bingham	4
St. Anthony	St. Anthony	Fremont	1
St. Charles	St. Charles	Bear Lake	3
St. Maries	Saint Maries	Benewah	1
Stanley	Stanley	Custer	3
Stanley Lake CG		Custer	1
Star	Star	Ada	1
Starkey	Starkey	Adams	3
Stibnite	Stibnite	Valley	4
Stites	Stites	Idaho	3
Stoddard Creek CG		Clark	1
Stone	Stone	Oneida	4
Sugar City	Sugar City	Madison	3
Sun Valley	Sun Valley	Blaine	1
Sunbeam	Sunbeam	Custer	5
Sunny Gulch CG		Custer	1
Swan Valley/Irwin	Swan Valley	Bonneville	4
Sweet	Sweet	Gem	3

Zone	City	County	Category
Syringa	Syringa	Idaho	3
Tahoe Ridge	Tahoe Ridge	Idaho	3
Tamarack	Tamarack	Adams	3
Tendoy	Tendoy	Lemhi	4
Terreton	Terreton	Jefferson	4
Teton	Teton	Fremont	3
Tetonia	Tetonia	Teton	3
Thornton	Thornton	Madison	4
Triangle	Triangle	Owyhee	5
Tuttle	Tuttle	Gooding	3
Twin Falls	Twin Falls	Twin Falls	1
Ucon	Ucon	Bonneville	3
USFS-R1			1
Victor	Victor	Teton	1
Wallace	Wallace	Shoshone	3
Warm Lake	Warm Lake	Valley	3
Warren	Warren	Idaho	3
Weippe	Weippe	Clearwater	3
Weiser	Weiser	Washington	1
Wendell	Wendell	Gooding	3
Weston	Weston	Franklin	3
White bird	White bird	Idaho	3
Wilder	Wilder	Canyon	3
Winchester	Winchester	Lewis	3
Wolf Lodge	Wolf Lodge	Kootenai	2
Wood River CG		Blaine	1
Worley	Worley	Kootenai	3
Wrenco	Wrenco	Bonner	3
Yellow Pine	Yellow Pine	Valley	3

APPENDIX B

Native Idaho Tree Species Ranked for Gypsy Moth Suitability

GENUS	SPECIES	COMMON NAME	Susceptibility Index*
Abies	grandis	grand fir	2
Abies	lasiocarpa	sub-alpine fir	2
Acer	glabrum	rocky mountain maple	2
Alnus	rhombifolia	white alder	2
Alnus	rubra	red alder	1
Alnus	tenuifolia	thinleaf alder	1
Betula	papyrifera	paper birch	1
Larix	lyallii	subalpine larch	1
Larix	occidentalis	western larch	1
Picea	engelmannii	Engelmann spruce	2
Pinus	albicaulis	whitebark pine	2
Pinus	contorta	lodgepole pine	2
Pinus	flexilis	limber pine	2
Pinus	monticola	western white pine	2
Pinus	ponderosa	ponderosa pine	2
Populus	spp.	poplar	1
Populus	tremuloides	quaking aspen	1
Populus	trichocarpa	black cottonwood	1
Pseudotsuga	menziesii	Douglas fir	2
Salix	spp.	willow	1
Sorbus	spp.	mountain ash	1
Thuja	plicata	western redcedar	3
Tsuga	heterophylla	western hemlock	2
Tsuga	mertensiana	mountain hemlock	2

*Susceptibility Index: 1—susceptible, 2—resistant, 3—immune
(Based on Liebhold et. al. 1995).